ABSTRACT OF THE DISCLOSURE

A reference posture and a reference position of the imaginary sphere and an arbitrary position are set. The relationship between three-dimensional coordinates and two-dimensional coordinates is derived by using a photographing means. Positions of marks given to the imaginary sphere formed at the coordinates in the three-dimensional space are converted into positions on a two-dimensional image. An operation of displacing a posture of the imaginary sphere relative to the reference posture and the reference position is performed in such a way that the coordinate values of the two-dimensional imaginary marks and the coordinate values of the marks present on the two-dimensional images of the sphere are coincident with each other. The rotational and flight characteristics of the sphere are computed, according to the three-dimensional posture and position at one time and the three-dimensional posture and position thereof at another time.